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**FAX COVER LETTER**

January 3, 2007

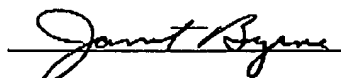
**TO:** Examiner Romain Jeanty  
**COMPANY:** U.S. Patent and Trademark Office – Art Unit 3623  
**PHONE:** 571.272.6732  
**FAX:** 571.273.8300

**FROM:** Rudolph P. Hofmann  
**DIRECT DIAL:** (612) 607-7340  
**EMAIL:** RHofmann@oppenheimer.com  
**RE:** U.S. Patent Application No. 10/062,099  
Attorney Docket No.: 20032-3009

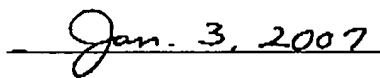
**CERTIFICATE OF FACSIMILE TRANSMISSION**

I hereby certify that the following documents are, being facsimile transmitted on the date shown below, to Mail Stop Amendment, Commissioner for Patents.

1. Communication – Request for Withdrawal of Notice of Abandonment
2. Copy of Auto-Reply Facsimile Transmission
3. Petition for Three Month Extension of Time
4. Amendment and Response to Office Action



Janet Byrne



Date

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Application No. 10/062099

In reply to Notice of Abandonment mailed December 13, 2006

Page 1 of 2

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PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Julian Enrique Pachon

Serial No.: 10/062,099

Filing Date: January 31, 2002

Title: INTEGRATED DECISION SUPPORT  
SYSTEM FOR OPTIMIZING THE  
TRAINING AND TRANSITION OF  
AIRLINE PILOTS

Group Art Unit: 3623

Examiner: Romain Jeanty

Docket No: 20032-3009

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

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*Janet Byrne* *Jan. 3, 2007*  
Janet Byrne Date

COMMUNICATION - REQUEST FOR WITHDRAWAL OF NOTICE OF  
ABANDONMENT

Dear Sir:

This communication is in response to the Notice of Abandonment mailed December 13, 2006, in the above-identified application. The Notice states that the application was abandoned for failure to file a proper reply to the Office Letter mailed on May 24, 2006. Applicants respectfully submit that a timely and proper reply was filed on Monday, November 27, 2006, which was within the statutory deadline because the actual six-month date was on a Saturday. Upon faxing the Amendment and Response to Office Action, we received the Patent Office's "Auto-Reply Facsimile Transmission" confirming receipt.

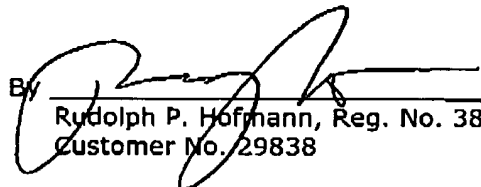
Application No. 10/062099

In reply to Notice of Abandonment mailed December 13, 2006

Page 2 of 2

We are resubmitting the Amendment and Response to Office Action along with a copy of the "Auto-Reply Facsimile Transmission" showing proof of receipt from the Patent Office for the original submission. Applicants respectfully request that the Notice of Abandonment be withdrawn and that the present amendment and response be considered.

Respectfully submitted,

By   
Rudolph P. Hoffmann, Reg. No. 38,187  
Customer No. 29838

OPPENHEIMER WOLFF & DONNELLY LLP  
45 South Seventh Street, Suite 3300  
Minneapolis, Minnesota 55402  
Telephone: 612-607-7340

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Philadelphia, PA 19106-1400

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## FAX COVER LETTER

November 27, 2006

TO: Examiner Ronald Jentz  
COMPANY: U.S. Patent and Trademark Office - Art Unit 3623  
PHONE: 571.272.6733  
FAX: 571.273.8300

FROM: Rudolph F. Hofmann  
DIRECT DIAL: (612) 607-7340  
EMAIL: RHofmann@oppenheimer.com  
RE: U.S. Patent Application No. 10/067,099  
Attorney Docket No.: 20032-3008

## CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that an Amendment and Response to Office Action, and a Petition for Three Month Extension of Time are being facsimile transmitted on the date shown below, to [Full Stop] Amendment, Commissioner for Patents.

Janet Byrne  
Janet Byrne

11-27-06  
Date

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PAGE 4/14 \* RCVD AT 1/3/2007 4:51:37 PM [Eastern Standard Time] \* SVR:USPTO-EFAXRF-5/19 \* DNIS:2738300 \* CSID:612 607 7100 \* DURATION (mm-ss):02-20

**COPY****PATENT****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE****RECEIVED  
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Applicant: Julian Enrique Pachon

Serial No.: 10/062,099

Filing Date: January 31, 2002

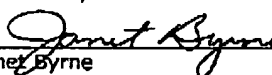
Title: INTEGRATED DECISION SUPPORT  
SYSTEM FOR OPTIMIZING THE  
TRAINING AND TRANSITION OF  
AIRLINE PILOTS

Group Art Unit: 3623

Examiner: Romain Jeanty

Docket No: 20032-3009

## Certificate of Mailing/Transmittal

Mail Stop **Amendment**  
Commissioner for Patents  
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Alexandria, VA 22313-1450 on the date shown below.  
Janet Byrne11-27-06  
Date**PETITION FOR THREE MONTH EXTENSION  
OF TIME (37 C.F.R. 1.136(A))**

Dear Sir:

Applicant respectfully requests a three month extension of time to respond to the office action dated May 25, 2006. The original time for response was set to expire August 25, 2006.

The Commissioner is authorized to charge the large entity three month extension fee, and any additional fees necessary or credit any such fees or overpayment to **Deposit Account No. 50-1901** (Ref. No. 20032-3009).

Respectfully submitted,

By   
Rudolph P. Hoffmann, Reg. No. 38,187  
Customer No. 29838**Oppenheimer Wolff & Donnelly LLP**  
45 South Seventh Street, Suite 3300  
Minneapolis, MN 55402-1609  
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Serial No. 10/062,099  
In Reply to Office Action mailed May 25, 2006  
Page 1 of 12

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant:	Julian Enrique Pachon	
Serial No.:	10/062,099	
Filing Date:	January 31, 2002	Group Art Unit: 3623
Title:	INTEGRATED DECISION SUPPORT SYSTEM FOR OPTIMIZING THE TRAINING AND TRANSITION OF AIRLINE PILOTS	Examiner: Romaln Jeanty
Docket No:	20032-3009	

**Certificate of Mailing/Transmittal**

**Mail Stop Amendment**  
Commissioner for Patents  
P.O. Box 1450  
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Janet Byrne

11-27-06  
Date

**AMENDMENT AND RESPONSE TO OFFICE ACTION**

Dear Sir:

In response to the Office Action mailed May 25, 2006, Applicant submits the following remarks and amendments that place the application in condition for allowance.

**Listing of the pending Claims** begins on page two (2) of this paper.

**Remarks** begin on page eleven (11) of this paper.

Serial No. 10/062,099  
In Reply to Office Action mailed May 25, 2006  
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### **Amendments to the Specification**

Replace page 1, lines 6-9

U.S. Patent Application Ser. No. 10/054,343, entitled "Integrated Decision Support System for Optimizing the Training and Transition of Airline Pilots", with filing date of November 13, 2001, and assigned to the assignee of the present invention.

Replace page 21, lines 21-34

The related U.S. Patent Application No. 10/054,343, filing date of November 13, 2001, and assigned to the assignee of the present invention, discloses a method and system for generating multiple alternative pilot training and transition plans in less than one hour. The current invention is an improvement over that of the above Application in that the MIP Model comprising the objective function of equation (5) above with constraints including the constraints of equations (6) – (13) may be solved in less than one hour to provide for the recall of furloughed pilots, and for a limitation of the percentage of pilots whose start bid periods for training assignments may deviate from a bid period of a pre-existing pilot training and transition plan during the process of generating new plans in response to change events. The rapid solution in less than one hour is accomplished by integrating into the optimizer engine 8 of Figure 1 commercially available software development kits and runtime libraries such as ILOG Concert Technology 1.0 and ILOG CPLEX 7.0 sold by ILOG, Inc. of Paris, France. Multiple alternative solutions which are realistic and feasible, and optimized to be cost effective, are thereby provided.

Serial No. 10/062,099

In Reply to Office Action mailed May 25, 2006

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### Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

#### Listing of Claims

1. (Currently amended) A system for rapidly generating multiple alternative pilot training and transition plans which include a recall of furloughed pilots for an entire airline, which comprises:

a user interface receiving input data and user requests including a request to recall said furloughed pilots;

a database having stored therein said input data and a current pilot training and transition plan; and

an optimizer system in electrical communication with said user interface and said database for receiving said user requests, said input data, and said current pilot training and transition plan for generating [[an]] MIP Model which includes said recall of said furloughed pilot, wherein MIP is mixed integer problem, and rapidly solving said MIP Model to provide said multiple alternative pilot training and transition plans[[.]];

wherein said MIP Model includes following objective function:

<<Start underline>>

$$\begin{aligned} & \text{Minimize } PNH \sum_t \sum_h NHCost_{ht} y_{NHht} + PNA \sum_t \sum_{i \in NA} NACost_{ti} y_{ti} + \\ & PF \sum_t \sum_{i \in F} FCost_{ti} y_{ti} + Ppay \left( \sum_{i \in A_1} a_i R_i + \sum_{i \in SBY} a_i R_{SBY} + \sum_{i \in A_2} a_i M_i \right) + \\ & PS * PBH \sum_h \sum_t S_{ht} / Blockhrs_{ht} + PE * PBH * (1/3) \sum_h \sum_t E_{ht} / Blockhrs_{ht} + \\ & PF \sum_t \sum_{i \in \lambda_{FR}} FRCost_{ti} y_{FRit} \end{aligned}$$

<<End underline>>

wherein PNH is Level of importance of New Hire Cost in the solution;

NHCost<sub>ht</sub> is Cost per new hire advanced to position h in period t (computed as the number of month between t and the end of the planning horizon, times the pay rate, times the average pay hours);

PNA is Level of importance of no-awards cost in the solution;



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In Reply to Office Action mailed May 25, 2006

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$NACost_t$  is Cost if pilot  $i \in NA$  is released in bid period  $t$  (computed as the number of months between  $t$  and the beginning of the planning horizon, times the pay rate, times the average pay hours);

$FCost_t$  is Cost if pilot  $i \in F$  is furloughed in bid period  $t$  (computed as the number of months between  $t$  and the beginning of the planning horizon, times the pay rate, times the average pay hours);

$Ppay$  is Level of importance of pay protection cost in the solution;

$PS$  is Level of importance of shortages in block hours in the solution;

$PE$  is Level of importance of excess in block hours in the solution;

$PF$  is Level of importance of furloughs cost in the solution;

$PBH$  is Cost associated to each block hour missed due lack of crews; and

$Block_{ht}$  is Business plan block hours for position  $h$  in bid period  $t$ .

2. (Original) The system of Claim 1, wherein said multiple alternative pilot training and transition plans are generated in less than one hour, and are cost optimized.

3. (Original) The system of Claim 1, wherein said recall of said furloughed pilots occurs in order of seniority and before any new pilots are hired.

4. (Original) The system of Claim 1, wherein said user requests include a user option to limit percentage of pilots whose start bid periods for training assignments occur outside of a bid period of said current pilot training and transition plan.

5. (Original) The system of Claim 1, wherein said user requests include a user option to limit total percentage of pilots whose start bid periods for training assignments occur within a bid period of said current pilot training and transition plan, and of said pilots whose start bid periods for training assignments occur outside of said bid period.

6. (Canceled)

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In Reply to Office Action mailed May 25, 2006

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7. (Currently amended) The system of Claim 1 [[6]], wherein said MIP Model includes following constraint to ensure that said furloughed pilots are recalled in seniority order:

$$\sum_{i=k}^N y_{FRi} - \sum_{i=k}^N y_{FRi-1} \leq 0 \quad \forall i \in \lambda_{FR}, k \in \{1..N\}$$

8. (Currently amended) The system of Claim 1 [[6]], wherein said MIP Model includes following constraint to ensure that new pilots are hired after all of said furloughed pilots are recalled:

$$y_{NHh} - MNH_h \sum_{i=1}^k y_{FRi} \leq 0 \quad \forall h, k \in \{1..N\}$$

9. (Currently amended) The system of Claim 1 [[6]], wherein said MIP Model includes following constraints to limit percentage of pilots whose start bid periods for training assignments may deviate from a bid period of said current pilot training and transition plan:

$$(i) \quad \sum_i t y_{i-L(t)} - W_i - d_i + q_i = 0 \quad \forall i \in \lambda;$$

$$(ii) \quad d_i + q_i \leq BigM * h_i \quad \forall i \in \lambda; \text{ and}$$

$$(iii) \quad \left( \sum_{i \in Adv_i} h_i / U_i \right) \leq P\_U_i \quad \forall i \in \{1..N\}.$$

10. (Currently amended) The system of Claim 1 [[6]], wherein said MIP Model includes following constraints to limit total percentage of pilots whose start bid period for training assignments may be changed to occur within a bid period of said current pilot training and transition plan, and of said pilots whose start bid period for training assignments may be changed to occur outside of said bid period:

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 In Reply to Office Action mailed May 25, 2006  
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- (i)  $diff_{it} = 1 - y_{it}$   $\forall i \in \lambda, t \in \{1..N\} \mid CM_{it} = 1$ ;
- (ii)  $diff_{it} = y_{it}$   $\forall i \in \lambda, t \in \{1..N\} \mid CM_{it} = 0$ ; and
- (iii)  $\sum_{i \in \lambda} diff_{it} / U_t \leq P\_U_t$   $\forall t \in \{1..N\}$ .

11. (Currently amended) A system for rapidly generating multiple alternative pilot training and transition plans which include a limit to changing start bid periods for training assignments for an entire airline, which comprises:

a user interface receiving input data and user requests including a request to limit changes to said start bid periods;

a database having stored therein said input data and a current pilot training and transition plan; and

an optimizer system in electrical communication with said user interface and said database for receiving said user requests, said input data, and said current pilot training and transition plan, for generating an MIP Model which includes said limit, wherein MIP is mixed integer problem and rapidly solving said MIP Model to provide said multiple alternative pilot training and transition plans[.];

wherein said MIP Model includes a following objective component for tracking payroll cost of pilots recalled from furlough:

<<Start underline>>

$$PF \sum_i \sum_{i \in \lambda_{FRH}} FRCost_{it} y_{FRH}$$

<<End underline>>

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 In Reply to Office Action mailed May 25, 2006  
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12. (Original) The system of Claim 11, wherein said limit applies to a percentage of pilots whose start bid periods for training assignments may deviate from a bid period of said current pilot training and transition plan .

13. (Original) The system of Claim 11, wherein said limit applies to total percentage of pilots whose start bid period for training assignments may be changed to occur within a bid period of said current pilot training and transition plan, and of said pilots whose start bid period for training assignments may be changed to occur outside of said bid period.

14. (Canceled)

15. (Original) The system of Claim 11, wherein said multiple alternative pilot training and transition plans are cost optimized, and a following objective component for tracking payroll costs of pilots recalled from furlough is included in the MIP model:

$$PF \sum_i \sum_{t \in \lambda_{FR}} FRCost_{it} y_{FRit}$$

16. (Currently amended) A system for generating multiple alternative pilot training and transition plans which include a recall of furloughed pilots for an entire airline, which comprises:

a user interface receiving input data and user requests including a request to recall said furloughed pilots ;

a database having stored therein said input data; and

an optimizer system in electrical communication with said user interface and said database for receiving said user requests and said input data, and generating therefrom an MIP Model including said recall of said furloughed pilots, wherein MIP is mixed Integer problem, and for solving said MIP Model to rapidly generate said multiple alternative pilot training and transition plans[.];

wherein said multiple alternative pilot training and transition plans are cost optimized and generated in less than one hour, and said MIP Model includes a following objective component for tracking payroll costs of pilots recalled from furlough:

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 In Reply to Office Action mailed May 25, 2006  
 Page 8 of 12

<<Start underline>>

$$PF \sum_i \sum_{t \in \lambda_{FA}} FRCost_{it} y_{FRit}$$

<<End underline>>

17. (Canceled)

18. (Original) The system of Claim 16, 18. The system of Claim 16, wherein said MIP Model includes following constraints to limit percentage of pilots whose start bid periods for training assignments may differ from a specific bid period:

$$(i) \quad \sum_i t y_{it-L(t)} - W_i - d_i + q_i = 0 \quad \forall i \in \lambda;$$

$$(ii) \quad d_i + q_i \leq BigM * h_i, \quad \forall i \in \lambda; \text{ and}$$

$$(iii) \quad \left( \sum_{i \in Adv_t} h_i / U_i \right) \leq P\_U_t, \quad \forall t \in \{1..N\}.$$

19. (Original) The system of Claim 16, wherein said MIP Model includes following constraints to limit total percentage of pilots whose start bid period for training assignments may be changed to occur within a specific bid period, and of said pilots whose start bid period for training assignments may be changed to occur outside of said bid period:

$$(i) \quad diff_{it} = 1 - y_{it} \quad \forall i \in \lambda, t \in \{1..N\} \mid CM_{it} = 1;$$

$$(ii) \quad diff_{it} = y_{it} \quad \forall i \in \lambda, t \in \{1..N\} \mid CM_{it} = 0; \text{ and}$$

$$(iii) \quad \sum_{i \in \lambda} diff_{it} / U_i \leq P\_U_t, \quad \forall t \in \{1..N\}.$$

Serial No. 10/062,099

In Reply to Office Action mailed May 25, 2006

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20. (Currently amended) An optimizer system including a database for rapid generation of multiple alternative pilot training and transition plans that accommodate a recall of furloughed pilots, which comprises:

data means for receiving user requests and input data from a user;

operating means in electrical communication with said data means for generating variables and constraints from said user requests and said input data, for generating an MIP Model from said variables and said constraints which provides for said recall of said furloughed pilots in seniority order and before hiring of new pilots, wherein MIP is mixed integer problem; and

means for solving said MIP Model with said variables and said constraints to generate therefrom said multiple alternative pilot training and transition plans with cost factor optimization[.];

wherein said MIP Model includes a following objective function:

<<Start underline>>

$$\begin{aligned} & \text{Minimize } PNH \sum_i \sum_h NHCost_{ht} y_{Nltht} + PNA \sum_i \sum_{ieNA} NACost_{it} y_{it} + \\ & PF \sum_i \sum_{ieF} FCost_{it} y_{it} + Ppay \left( \sum_{ie\lambda_1} a_i R_i + \sum_{ie58Y} a_i R_{58i} + \sum_{ie\lambda_2} a_i M_i \right) + \\ & PS * PBH \sum_h \sum_i S_{ht} / Blockhrs_{ht} + PE * PBH * (1/3) \sum_h \sum_i E_{ht} / Blockhrs_{ht} + \\ & PF \sum_i \sum_{ie\lambda_{PR}} FRCost_{it} y_{PRit} \end{aligned}$$

<<End underline>>

21. (Original) An optimizer system including a database for rapid generation of multiple alternative pilot training and transition plans that include a recall of furloughed pilots, which comprises:

data means for receiving user requests including a request to" recall said furloughed pilots, and for receiving input data, and a current pilot training and transition plan;

operating means in electrical communication with said data means for receiving said user requests, said input data, and said current pilot training and transition plan, for generating variables and constraints therefrom, and for generating an MIP Model from said

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In Reply to Office Action mailed May 25, 2006  
Page 10 of 12

variables and said constraints to provide said recall of said furloughed pilots in seniority order and before hiring of new pilots, and provide a limit to deviating start bid periods for training assignments with respect to a bid period of said current pilot training and transition plan; and

means for solving said MIP Model with said variables and said constraints to generate said multiple alternative pilot training and transition plans with cost optimization.

22. (Original) The optimizer system of Claim 21, wherein said limit is applied to a percentage of pilots whose start bid periods for training assignments occur outside of said bid period.

23. (Original) The optimizer system of Claim 21, wherein said limit is applied to a total percentage of said furloughed pilots whose start date for training assignments is changed to occur within said bid period, and of said furloughed pilots whose start date for training assignments is changed to occur outside of said bid period.

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Canceled)

28. (Canceled)

29. (Canceled)

30. (Canceled)

31. (Canceled)

Serial No. 10/062,099  
In Reply to Office Action mailed May 25, 2006  
Page 11 of 12

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#### REMARKS

This is in response to the Office Action mailed on May 25, 2006. Claims 1-31 were pending in the application and were rejected. With this response, claims 1, 7-11, 16, 18, and 20 amended. Claims 6, 14, 17, and 24- 31 are canceled. The remaining claims are unchanged, and no new claims are added to the application.

The specification was objected to because the U.S. Patent Serial number was missing from page 1, line 4. Applicants have amended the specification to include serial number "10/054,343.

Claims 1, 16, 20-21, and 26 were objected because of an informality describing the term "MIP." The pending independent claims have been amended to include the description of "wherein MIP is mixed integer problem." Claim 26 was canceled.

The claims 6-10, 14-15, 17-19, and 24-25 were rejected under 35 U.S.C. 112, second paragraph, because it is unclear what is meant by certain parameters appearing in the claims. Applicants respectfully submit that each of these parameters are clearly described in the specification, such as in tables I - VIII. In addition, applicants have amended the now applicable claims to include a definition of these parameters.

Claims 1-5, 11-13, 16, 20-23, 26-31 were rejected under 35 U.S.C. as being unpatentable over Yu in view of Dialog. On the other hand, claims 6-10, 14-15, 17-19, and 24-25 are indicated as "allowable if rewritten to overcome the rejections under 35 U.S.C. 112, second paragraph, set forth in the Office Action and to include all of the limitations of the base claim and any intervening claims." With this amendment, the limitations of claims 6, 14, and 24 have been amended into independent claims 1, 11, and 20, respectively. Applicants have amended the additional dependent claims to reflect this change. Applicants respectfully submit that the amended independent claims are patentably distinguishable from the prior art.

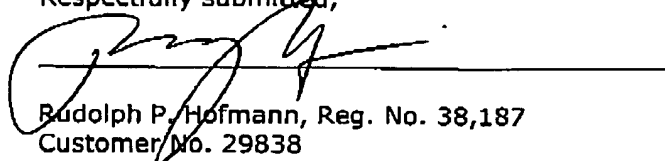
Applicants respectfully request the removal of the rejection and also request favorable action and allowance of the application.



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In Reply to Office Action mailed May 25, 2006  
Page 12 of 12

In the event a telephone conversation would expedite the allowance of the present application, the undersigned may be reached at 612-607-7340. If any fees are due in connection with the filing of this paper, then the Commissioner is authorized to charge such fees, including fees for any extension of time, to Deposit Account No. 50-1901 (Docket 20032-3009).

Respectfully submitted,



Rudolph P. Hofmann, Reg. No. 38,187  
Customer No. 29838

OPPENHEIMER WOLFF & DONNELLY LLP  
Plaza VII, Suite 3300  
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